

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-32. (Cancelled).

33. (Currently Amended) A method of treating arthritis, muscular dystrophy, multiple sclerosis, arteriosclerosis, autoimmune disease, ischemia-reperfusion injury, neurodegenerative disease, myocardial infarction, or stroke in a subject in need of such a treatment, said method comprising: inhibiting apoptosis in the subject by administering **at least once daily and no more than once hourly** a therapeutically effective amount of α_1 -antitrypsin, an oxidation-resistant α_1 -antitrypsin Met³⁵⁸ variant or a free radical-resistant α_1 -antitrypsin M³⁵⁸ variant.

34. (Previously Presented) The method of Claim 33, wherein the effective amount is at least 0.001 and no greater than 70 g/kg body weight.

35. (Previously Presented) The method of Claim 33, further comprising administering at least one free radical scavenger or inhibitor.

36. (Previously Presented) The method of Claim 33, in which the subject is a human.

37. (Previously Presented) The method of Claim 33, in which the therapeutically effective amount is sufficient to provide at least 10 pM and no greater than 2 mM of the inhibitor in the biological fluid of the subject.

38. (Previously Presented) The method of Claim 37, in which the biological fluid is blood.

39. (Previously Presented) The method of Claim 37, in which the therapeutically effective amount is sufficient to provide at least 0.5 μ M and no greater than 2000 μ M in the biological fluid of the subject.

40. (Previously Presented) The method of Claim 33, in which the administering is parenterally, orally, vaginally, rectally, nasally, buccally, intravenously, intramuscularly, subcutaneously, intrathecally, epidurally, transdermally, intracerebroventricularly, by osmotic pump, by inhalation, or combinations thereof.

41. (Cancelled).
42. (Previously Presented) The method of Claim 33, wherein the neurodegenerative disease is Alzheimer's disease or Downs Syndrome.
43. (Currently Amended) A method for treating a arthritis, muscular dystrophy, multiple sclerosis, arteriosclerosis, autoimmune disease, ischemia-reperfusion injury, neurodegenerative disease, myocardial infarction, or stroke in a subject in need of such a treatment, said method comprising administering **at least once daily and no more than once hourly** to the subject a therapeutically effective amount of α_1 -antitrypsin, an oxidation-resistant α_1 -antitrypsin Met³⁵⁸ variant or a free radical-resistant α_1 -antitrypsin M³⁵⁸ variant.
44. (New) The method of Claim 43, wherein the effective amount is at least 0.001 and no greater than 70 g/kg body weight.
45. (New) The method of Claim 43, further comprising administering at least one free radical scavenger or inhibitor.
46. (New) The method of Claim 43, in which the subject is a human.
47. (New) The method of Claim 43, in which the therapeutically effective amount is sufficient to provide at least 10 pM and no greater than 2 mM of the inhibitor in the biological fluid of the subject.
48. (New) The method of Claim 47, in which the biological fluid is blood.
49. (New) The method of Claim 47, in which the therapeutically effective amount is sufficient to provide at least 0.5 μ M and no greater than 2000 μ M in the biological fluid of the subject.
50. (New) The method of Claim 43, in which the administering is parenterally, orally, vaginally, rectally, nasally, buccally, intravenously, intramuscularly, subcutaneously, intrathecally, epidurally, transdermally, intracerebroventricularly, by osmotic pump, by inhalation, or combinations thereof.
51. (New) The method of Claim 43, wherein the neurodegenerative disease is Alzheimer's disease or Down's Syndrome.